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10/549,418	09/14/2005	Oug-Ki Lee	21CEN-007PUS	6325
22494 7590 12/05/2008 DALY, CROWLEY, MOFFORD & DURKEE, LLP SUITE 301A 354A TURNPIKE STREET CANTON, MA 02021-2714				
EXAMINER D'ANIELLO, NICHOLAS P				
ART UNIT		PAPER NUMBER		
1793				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@dc-m.com  
amk@dc-m.com

# Office Action Summary

## Application No.

10/549,418

## Applicant(s)

LEE ET AL.

## Examiner

Nicholas P. D'Aniello

## Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1, 3-5 and 7-25 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-5, 11-20 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 21 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/US)  
Paper No(s)/Mail Date 11/13/2008 and 11/26/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ ~~Notice of Informal Patent Application~~
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendments***

The amendment with a request for continued examination (RCE) filed November 4<sup>th</sup> 2008 is acknowledged. Claims 1 and 5 have been amended; claims 1, 2-5 and 7-25 remain pending in the application. All of the references are of record unless otherwise noted.

### ***Claim Objections***

Claim 1 is objected to because of the following informalities: This claim reads "x-axis moving state" in line 5, where "state" is meant to read "stage". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 17 recites the limitation "the supporting member", it is unclear whether this is referring the first or second supporting member. For the purpose of examination it is assumed this is referring to the first supporting member.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leong et al (US Patent No. 5,811,751) in view of Kobsa (US Patent No. 6,163,010) and Ingle (USP 4,475,681).

Leong et al. teaches a probe-positioning device consisting of a base machine (10) including a base frame (taken to be a stage unit on a working table) which *supports the probe substrate with a probe site*. Wherein the stage includes a translation stage (12) for X and Y adjustments, cables allowing for rotation of the chuck (16, rotating stage), a microscope mounting bridge (11, first supporting member), a microscope (22) and adjacent to the chuck (16) is a platen (17, second supporting member disposed on the working table) on which to position a plurality of probe heads (18 and 19, probe fixing units on a bracket). A multi-wavelength laser (24) is mounted toward the upper part of the stage unit on top of the microscope (22, effectively acting as the third supporting member disposed on the working table) (column 5, lines 42-64).

In regard to the microscope being movable disposed, this is taken to be implicit in the operation of a stereomicroscope (such as the Mitutoyo FS-60 taught by the reference, which has focusing controls to move the microscope vertically) (column 5, lines 59-62) because in order to focus a stereo microscope the optical field must be adjusted by **moving** the microscope vertically (z-direction).

Leong et al. differs from the claimed invention because it does not teach the X, Y, and Z translation stages to be disposed on top of one another however it would have

been obvious in the art that these stages could be separate stages on top of each other because Kobsa teaches a similar apparatus where the X-axis positioning stage (34), Y-axis positioning stage (36) and Z-axis positioning stage (38) are disposed on top of each other (column 5, lines 62-64). It would have been obvious to one of ordinary skill in the art that the inclusion of a separate stage for each orthogonal axis would give the user advanced control and precision in the movement of the work piece which is necessary when dealing with micron sized features.

In regard to the amendment, "the probe site to which at least one probe is bonded" relates to the material worked on by the apparatus, however per MPEP 2115: "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 75 F.2d 996, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

The claim now differs from the references in calling for the probe fixing unit moving (to be movable) along the second support member vertical to the working table. However, it would have been obvious in the art to employ a probe fixing unit which can move vertically for holding the probe because Ingle teaches a similar wire (probe) bonding apparatus (see figure 1) with a microscope 22 where clamping arms (100a and 100b or figure 17: 440 and 442) are provided on a support arm (44, taken to be a bracket) and a wire clamping control solenoid (108 or 452) is provided to enable the

clamping arms to move on an axis 448 normal to the support arm (reciprocating mover) (column 7, lines 33-63 and column 18, lines 43-60). Furthermore, such clamping members would allow for the bonding to be effected with low impact force by selectively gripping the wire and linearly advancing in predetermined sequential and incremental movements during bonding (column 2, lines 42-63).

In regard to **claim 3**, the clamping arms of Ingle are reasonably considered a pincette for the holding the probe and have a reciprocating mover with a piston structure driven by a solenoid 452 and a bracket as applied above (column 18, lines 43-60).

In regard to **claim 4**, as seen in figures 2-4 of Ingle, the probe fixing unit is disposed on a pivot plate (46, which would be considered the second supporting member in the apparatus of Leong et al.) and a coil compression spring (92) which is able to pivot (slidably move) the support arm (bracket) upwardly (z-direction) relative to the pivot plate (column 7, lines 9-23).

In regard to **claim 5**, the probe fixing unit of Ingle is connected to many adjusting members (control plate 66, pivot plate 46) which enable it to pivot about the z-axis (pivot axis 72) and about a traverse pivot axis (48, **rotation about x-direction**) (column 6 line 37 - column 7 line 8). A stop screw (110) in the clamping arm (100a) is adjustable to selectively limit the maximum opening between the clamping finger (column 7, lines 59-64) effectively restricting the open angle of the pincette. Although not explicitly taught, it would have been obvious to one of ordinary skill in the art at the time of invention to employ grooves in the pincette of Ingle to ensure a better grip and avoid crimping and/or damage to the fragile probes.

3. Claim 11-20 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leong et al (US Patent No. 5,811,751) in view of Kobsa (US Patent No. 6,163,010), Ingle (USP 4,475,681) and Mucheryan (USP 3,383,491 a newly cited reference).

In regard to independent claim 11, Leong et al. teach an apparatus (*for positioning and bonding probes to a substrate of a probe card, is intended use*), comprising (see figures 1 and 5): a stage unit (16, 301) on a working table (reasonably assumed to be on a table), the stage unit being movable in two dimensions and supporting the substrate (x and y controls 305 and 306, x-y translation stage 12, rotational control 13); a microscope 22, 300 coupled to a first guide member 11, 302, positioned at a first portion of the working table and placed above the stage unit; a light source (laser 26) unit, (*a laser being emitted to the connection portion of the substrate from the light source unit, to thereby bonding the probe to the substrate at the connection portion of the substrate*), is a functional limitation as per MPEP 2114 relating to Apparatus and Article claims – Functional Language: While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). As the references and the claimed probe bonding apparatus are patentably indistinguishable in terms of structure, the apparatus of the prior art is reasonable expected to be able to perform the claimed functionality.).

The claim differs in calling for the stage unit to be movable in three dimensions; however, Kobsa teaches a similar apparatus where the X-axis positioning stage (34), Y-axis positioning stage (36) and Z-axis positioning stage (38) are disposed on top of each other (column 5, lines 62-64). It would have been obvious to one of ordinary skill in the art that the inclusion of a separate stage for each orthogonal axis would give the user advanced control and precision in the movement of the work piece which is necessary when dealing with micron sized features.

The claim differs in calling for the laser to be supported by a second guide member positioned on the second portion of the working table. However Muncheryan teaches a laser bonding apparatus and the desirability to separately support the microscope 11 with a first guide member (adjustable brackets 12) and the laser 9 by a second guide member (holding means 7) which is on a second portion of the working table 1 (see figure 1, column 4 lines 53-69) which allows for the more flexibility in the apparatus. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a second guide member for supporting the light source in the apparatus of Leong et al. to allow for the use of different lasers that are not able to be mounted on the microscope.

The claim differs in calling for a probe fixing unit mounting on a supporting member in such a configuration that the probe fixing unit moves on the supporting member vertically to the working table, an end portion of the probe fixing unit to which a probe is fixed being interposed between the microscope and the stage unit so that the probe makes contact with the substrate at a connected portion thereof. However, it



would have been obvious in the art to employ a probe fixing unit which can move vertically for holding the probe between the microscope and the stage because Ingle teaches a similar wire (probe) bonding apparatus (see figure 1) with a microscope 22 where clamping arms (fixing units, 100a and 100b or figure 17: 440 and 442) are provided on a support arm (44, taken to be a bracket) and a wire clamping control solenoid (108 or 452) is provided to enable the clamping arms to move on an axis 448 normal to the support arm (moves vertically to make contact with substrate) (column 7, lines 33-63 and column 18, lines 43-60). Furthermore, such clamping members would allow for the bonding to be effected with low impact force by selectively gripping the wire and linearly advancing in predetermined sequential and incremental movements during bonding (column 2, lines 42-63).

Regarding **claim 12**, as applied above, Kobsa teaches a similar apparatus where the X-axis positioning stage (34), Y-axis positioning stage (36) and Z-axis positioning stage (38) are disposed on top of each other (figure 1, column 5, lines 62-64). It would have been obvious to one of ordinary skill in the art that the inclusion of a separate stage for each orthogonal axis would give the user advanced control and precision in the movement of the work piece which is necessary when dealing with micron sized features.

In regard to **claim 13**, wherein the substrate is positioned on the stage unit by three-dimensional movement of the stage unit in such a configuration that the connected portion of the substrate corresponds to the probe gripped to the end portion of the probe fixing unit, and the position of the substrate is verified by the microscope

relate to the material worked upon by the apparatus and functional limitations of the apparatus (MPEP 2114 and 2115).

In regard to **claim 14**, wherein the probe includes a supporting beam and a probe tip positioned on a first end portion of the supporting beam, and the supporting beam of the probe is boned to the connected portion of the substrate and the probe tip faces outwards relate the material worked upon (MPEP 2115)

In regard to **claim 15**, wherein the probe fixing unit moves vertically on the supporting member upward without movement of the stage unit, so that another probe is gripped by the probe fixing unit without change of the position of the substrate on the stage unit relates to functional limitations (MPEP 2114).

In regard to **claim 16**, Muncheryan teaches the first guide member 12 includes a first supporting member 13 fixed to the first portion of the working table and a first arranging member 6 extending from an end portion of the first supporting member 13 in a first direction and the second guide member 7 includes a second supporting member 8 fixed to the second portion of the working table and a second arranging member 3 extending from an end portion of the second arranging member 3 in a second direction opposite to the first direction, and the microscope 11 is coupled to the first arranging member 6 over the stage unit and the light source unit 9 is mounted onto the second arranging member 3 movably along the second arranging member close to or away from the microscope unit (see figure 1).

In regard to **claim 17**, Muncheryan teaches the first and second guide members 7, 12 are positioned at both sides of the stage unit 10 on the working table 1 and the

first supporting member 13 is positioned on a backside of the stage unit on the working table (see figure 1).

In regard to **claim 18**, wherein the probe fixing unit includes (see Ingle figures 16 and 17): a bracket moveably (clamping arm 442) secured to the supporting member (support arm 44); a pincette (clamping fingers 444 and 446) moveably secured to the bracket; and a controller (adjustable coil spring 450) for controlling an open angle of the pincette, the controller being positioned at a side of the pincette and applying a pressure to the probe pincette (column 18, lines 43-70 of Ingle).

In regard to **claim 19**, wherein the pincette includes a head portion 448 secured to the bracket and a gripping portion opposite to the head portion to which the probe is fixed (figure 17 of Ingle).

In regard to **claim 20**, although not explicitly taught, it would have been obvious to one of ordinary skill in the art at the time of invention to employ grooves in the pincette of Ingle to ensure a better grip and avoid crimping and/or damage to the fragile probes.

In regard to **claim 23**, wherein the controller includes an open angle controller (stop screw 110) positioned at a first side of the bracket and a reciprocating mover positioned at a second side opposite to first side of the bracket the bracket, so that the opening angle of the gripping portion of the pincette is controlled by the pressure applied by the controller (column 7, lines 59-64 of Ingle).

In regard to **claim 24**, wherein the reciprocating mover (solenoid 108) applies the pressure to the gripping portion of the pincette from the second side of the bracket while

the open angle controller (stop screw 110) supports the gripping portion of the pincette at the first side of the bracket ((column 7, lines 59-64, see figure 3 of Ingle).

In regard to **claim 25**, wherein the reciprocating mover applies the pressure to the gripping portion of the pincette by a piston operated by an electrical solenoid 108 (column 7, lines 59-64 of Ingle).

#### ***Allowable Subject Matter***

Claims 21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. These claims structurally define the pincette apparatus with limitations that are not suggested in any of the prior art disclosures discovered at this time.

#### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not persuasive. The argument against Leong et al. not having probe fixing units which can move vertically is moot in view of the new grounds of rejection presented above.

In response to the argument that the laser of Leong is attached to the microscope, there are no limitations in the claims 1 or 3-5 which would prevent the microscope from being considered the supporting member for the laser. Claim 11 positively requires a separate support and has been addressed as such.

In response to the arguments that pivoting would not be embraced by the plain meaning of "slidably moving" this is not persuasive as applicant has provided no reasoning why pivoting is not considered slidably moving. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. slidable vertical movement in one direction) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In regard to the argument about claim 5, this claim as amended is still embraced by Ingle in that the intended meaning of this claim is different than how it may be currently interpreted: the adjusting members (pivot plate 46) adjusts the pincette in the x direction by rotation of the pincette about the x-axis. Contrary to applicant's assumed interpretation (inferred from specification and drawings) this claim does not require the adjusting member to rotate about the x axis.

### ***Conclusion***

The prior art made of record in the IDS dated 11/26/2008 and not relied upon is considered pertinent to applicant's disclosure. Specifically, the foreign patents cited in the Korean and Japanese office actions, which are pending for translation.

### ***Inquires***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas P. D'Aniello whose telephone number is

(571)270-3635. The examiner can normally be reached on Monday through Thursday from 8am to 5pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. P. D./  
Examiner, Art Unit 1793

/Kiley Stoner/  
Primary Examiner, Art Unit 1793